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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,492	01/05/2006	Xuexian Yang	L4050.0007	8281

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EXAMINER

SAMS, MATTHEW C

ART UNIT	PAPER NUMBER
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2617

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02/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,492	Applicant(s) YANG ET AL.	
	Examiner MATTHEW SAMS	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings filed on 1/5/2006 are accepted.

Information Disclosure Statement

3. The information disclosure statement filed on 2/4/2009 has been considered.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Bourlas et al. (US-6,459,687 hereinafter, Bourlas).

Regarding claim 1, Bourlas teaches a method for improving channel transmission efficiency in a wireless network (Fig. 1 [100] and Col. 2 lines 32-57) which, in the course of data transmission (Col. 3 lines 3-16), changes a length of a data frame split from a Media Access Control (MAC) layer service data packet in real-time according to a channel state of the wireless network. (Col. 19 lines 10-37)

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Cimini, Jr. et al. (US-7,301,965 hereinafter, Cimini).

Regarding claim 1, Cimini teaches a method for improving channel transmission efficiency (Col. 1 lines 46-49) in a wireless network (Fig. 1A & 1B) which, in the course of data transmission, changes a length of a data frame split from a Media Access Control (MAC) layer service data packet in real-time according to a channel state of the wireless network. (Col. 1 lines 49-54)

Regarding claim 2, Cimini teaches in the course of data transmission, the channel state of the wireless network is monitored in real-time, and if the channel of the wireless network is monitored in real-time, and if the channel of the wireless network is of good quality or does not have a signal collision phenomenon, then the length of the data frame split from the Media Access Control (MAC) layer service data packet is increased, and if the channel of the wireless network is of a bad quality or has severe signal collisions, then the length of the data frame split from the Media Access Control (MAC) layer service data packet is decreased. (Col. 1 lines 49-54 and Col. 8 lines 16-22)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cimini in view of Western (US-7,489,703).

Regarding claim 3, Cimini teaches the limitations of claim 2 above including

1) starting data transmission and splitting the MAC layer service data packet according to an initial threshold for the length of the data frame to transmit (Col. 7 lines 6-23), but differs from the claimed invention by not explicitly reciting

2) reading and recording acknowledgement information (ACK) sent by a partner in real-time;

3) determining the channel quality of the wireless network according to whether the ACK information has been successfully received for a predetermined times, if the channel of the wireless channel is of a good quality, then increasing the threshold for the length of the data frame split from the MAC layer service data packet, and other wise decreasing the threshold for the length of the data frame;

4) splitting a subsequent MAC layer service data packet according to the threshold for the length of the data frame adjusted in step 3) to transmit;

5) repeating steps 2), 3) and 4) until the end of this data transmission.

In an analogous art, Western teaches a method and apparatus for selecting a coding scheme (Abstract) that includes:

1) starting data transmission and splitting the MAC layer service data packet according to an initial threshold for the length of the data frame to transmit (Col. 10 lines 20-24, where DCS-X represents an initial coding scheme, wherein the different coding schemes have varying packet lengths, see Figs. 3-6 and Fig. 7 [715])

2) reading and recording acknowledgement information (ACK) sent by a partner in real-time; (Fig. 7 [730 & 740])

3) determining the channel quality of the wireless network according to whether the ACK information has been successfully received for a predetermined times (Fig. 7 [740 & 743]), if the channel of the wireless channel is of a good quality, then increasing the threshold for the length of the data frame split from the MAC layer service data packet, and other wise decreasing the threshold for the length of the data frame; (Fig. 7 [745, 750 & 765])

4) splitting a subsequent MAC layer service data packet according to the threshold for the length of the data frame adjusted in step 3) to transmit; (Fig. 7 [755, 757, 767 & 769], Figs. 3-6 and Col. 10 line 53 through Col. 13 line 12) *note*: Fig. 7 is for downlinks, similar discussion follows in Fig. 8 for uplink modifications as well as discussed in Col. 13 line 13 through Col. 15 line 53

5) repeating steps 2), 3) and 4) until the end of this data transmission. (Fig. 7 loops back to before step 740)

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to be motivated to implement the invention of Cimini after modifying it to incorporate the adaptive coding scheme of Western since utilizing multiple coding schemes enables the maximization of data throughput for all mobile stations in a network. (Western Col. 3 lines 27-32)

Regarding claim 4, Cimini in view of Western teaches the initial threshold is a threshold specified in *Wireless LAN Media Access Control (MAC) and Physical Layer (PHY) Specifications (IEEE 802.11)*. (Cimini Col. 1 lines 16-17, Col. 2 line 63 through Col. 3 line 2 and Col. 7 lines 56-63)

Regarding claim 5, Cimini in view of Western teaches wherein the step 3) includes the steps of:

3A) presetting the times N for which the ACK information is continuously received successfully before increasing the threshold for the length of the data frame, and the times M for which the ACK information is continuously received unsuccessfully before decreasing the threshold for the length of the data frame; (Western Fig. 7 [740])

3B) when the ACK information is continuously received successfully for N times, the channel of the wireless network being of a good quality and increasing the threshold for the length of the data frame; (Western Fig. 7 [743, 745, 750 & 757] and Figs. 3-6)

3C) when the ACK information is continuously received unsuccessfully for M times, the channel of the wireless network being of a bad quality and decreasing the

Art Unit: 2617

threshold for the length of the data frame. (Western Fig. 7 [743, 745, 765 & 769] and Figs. 3-6)

Regarding claim 6, Cimini in view of Western teaches wherein the step 3) includes the steps of:

3a) presetting a time interval for adjusting the threshold for the length of the data frame; (Western Col. 10 lines 39-45)

3b) determining whether the ACK information is received for the predetermined times within the time interval preset in step 3a), if the ACK information is successfully received for the predetermined times, then the channel of the wireless network being of a good quality and increasing the threshold for the length of the data frame, and otherwise the channel of the wireless network being of a bad quality and decreasing the threshold for the length of the data frame. (Western Fig. 7 [743, 745, 750 & 757] *i.e.* good quality & [743, 745, 765 & 769] *i.e.* bad quality)

Regarding claim 7, Cimini in view of Western teaches the preset time interval is a product obtained by multiplying the number of the sent data frames by a maximum time duration required from sending of one data frame to receipt of an ACK of this frame specified in IEEE 802.11 protocol. (Obvious because Cimini utilizes the MAC detailed in the IEEE 802.11 protocol (Cimini Col. 4 lines 15-43) and it is obvious that if 2 packets are transmitted, then the time to transmit/receive 2 responses is longer than if only one is transmitted See Cimini Fig. 12A & 12B)

Regarding claim 8, Cimini in view of Western teaches wherein the predetermined times for receiving the ACK information is in a range between a number obtained by

Art Unit: 2617

subtracting the number of lost packets allowable to the user from the number of sent data frames and the number of the sent data frames. (Western Col. 11 line 11 through Col. 12 line 67 *i.e.* based on the value determines which quality category is determined)

Regarding claim 9, Cimini in view of Western teaches the increasing range of the threshold for the length of the data frame is to increase 0-100% of the previous threshold each time; (Cimini Col. 8 lines 5-67, Western Figs. 3-6 and Fig. 7 [750]) and the decreasing range of the threshold for the length of the data frame is to decrease 0-100% of the previous threshold each time. (Cimini Col. 8 lines 5-67, Western Figs. 3-6 and Fig. 7 [765])

Regarding claim 10, Cimini in view of Western teaches the threshold for the length of the data frame is in a range from a minimum frame length threshold specified in IEEE 802.11 specification to a maximum frame length threshold specified in IEEE 802.11 specification. (Cimini Col. 1 lines 16-26 and Col. 4 lines 33-43)

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US-2003/0101387 to Lee regarding an apparatus and method for varying packet frame length.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW SAMS whose telephone number is (571)272-8099. The examiner can normally be reached on M-F 8-6.

Art Unit: 2617

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. S./

Examiner, Art Unit 2617

/Lester Kincaid/

Supervisory Patent Examiner, Art Unit 2617